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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Thomas, et al.
Serial No.: 09/647,126
Filed: September 26, 2000
Group Art Unit: 3613
Examiner: Siconolfi, Robert
Title: DISC BRAKE SEAL ASSEMBLY

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Box AF
Assistant Commissioner of Patents
Washington, D.C. 20231

APPEAL BRIEF

Dear Sir:

Subsequent to the filing of the Notice of Appeal on July 30, 2002, Appellant hereby submits its brief. The Commissioner is authorized to charge Deposit Account 50-1482 in the name of Carlson, Gaskey & Olds, P.C. \$320.00 for the appeal brief fee. Any additional fees or credits may be charged or applied to Deposit Account No. 50-1482 in the name of Carlson, Gaskey & Olds, P.C.

REAL PARTY IN INTEREST

The real party in interest is Meritor Heavy Vehicle Braking Systems (UK) Ltd. the assignee of the entire right and interest in this Application.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 19-33 stand finally rejected under 103(a).

STATUS OF AMENDMENTS

All amendments have been entered.

SUMMARY OF THE INVENTION

As shown in Figure 1, this invention relates to a seal device for use in an adjustable tappet assembly 17 for a disc brake for sealing between an internally threaded outer sleeve 24 and an externally threaded internal shaft 25. The device includes a support element 31 adapted to be carried by the sleeve 24. The support element 31 carries a seal 33 for sealing between the sleeve 24 and the shaft 25 and has a lip portion 34 arranged to engage an unthreaded surface portion of the shaft 25 for providing sealing during axial movement of the shaft 25 relative to the sleeve 24. This basic structure is set forth in claims 19 and 26.

Claims 20 and 27 depend on claims 19 and 26, respectively, and add that an outer surface of the support element 31 provides a smooth sealing surface for engagement by a lip portion of a further seal 37 carried by an adjacent structure 35. Dependent claims 21 and 28 add that the support element 31 is a cap having a generally annular skirt adapted to fit over an end portion of the sleeve 24, and a further seal 37 engages the outer surface of the skirt. Claim 22 and 29 add that the support element 31 is carried externally by the sleeve 24. Finally, claims 23 and 30, which depend on claims 19 and 26, respectively, claim that an annular base 32 of the support element 31 rests against an adjacent end of the sleeve 24 with a portion of the shaft 25 extending through the base 32.

ISSUES

- A. Are Claims 19-33 properly rejected under 35 U.S.C. 103(a) based on Baumgartner et al. in view of Angerfors?
- B. Are Claims 20, 21, 27 and 28 properly rejected under 35 U.S.C. 103(a) based on Baumgartner et al. in view of Angerfors?
- C. Are Claims 22 and 29 properly rejected under 35 U.S.C. 103(a) based on Baumgartner et al. in view of Angerfors?
- D. Are Claims 23 and 30 properly rejected under 35 U.S.C. 103(a) based on Baumgartner et al. in view of Angerfors?

GROUPINGS OF CLAIMS

- A. The rejection of Claims 19-33 is contested.

- B. The rejection of Claims 20, 21, 27 and 28 is separately contested, that is, the rejection of the Claims does not stand or fall with the rejection of the other Claims.
- C. The rejection of Claims 22 and 29 is separately contested, that is, the rejection of the Claims does not stand or fall with the rejection of the other Claims.
- D. The rejection of Claims 23 and 30 is separately contested, that is, the rejection of the Claims does not stand or fall with the rejection of the other Claims.

PATENTABILITY ARGUMENTS

A. The rejection of Claims 19-33 under 35 U.S.C. 103(a) is improper.

The Examiner finally rejected Claims 19-33 based on Baumgartner et al. (United States Patent No. 5,568,845) in view of Angerfors (United States Patent No. 6,269,914). Baumgartner discloses a disc brake including a traverse member 7 having two bores. Each bore has internal threads into which adjusting spindles 70 and 71 are screwed. As disclosed in column 7, lines 5 to 9 and shown in Figure 1B, a friction ring 80 is secured to the threaded bore of the traverse member 7 and engages the threads of the spindle 70. The friction ring 80 is also received by an additional angular part 81. Angerfors discloses a disc brake device including a tappet assembly 14 having a sleeve with an internal thread 23 which meshes with an external thread 24 of a second part. The second part has an extension 25 with a pressure head 29 which applies axial pressure on the outer surface of the brake pad units 10. An elastic sealing ring 41 creates a seal between the tappet assembly 14 and the extension 25. The Examiner argues that it would be obvious to one of ordinary skill in the art at the time was invention was made to have the seal bear against an unthreaded portion of the shaft in the tappet of Baumgartner as taught by Angerfors.

The present invention is patentable and strikingly different from the combination of Baumgartner and Angerfors. As described by the claims, the present invention provides a seal device for use in an adjustable tappet assembly for a disc brake for sealing between an internally threaded outer shaft and an externally threaded internal shaft having:

a support element adapted to be carried by said sleeve, said support element carrying a seal for sealing between said sleeve and said shaft having a lip portion arranged to engage an unthreaded surface portion of said shaft in sealing relationship for providing sealing during axial movement of said shaft relative to said sleeve.

[See Claim 19]. Claims 19-33 of the present invention all share this same or similar feature. [See Claims 19-33].

Having the friction ring 70 of Baumgartner contact an unthreaded portion of the adjusting spindle 70 would ruin the disclosed benefits of Baumgartner. As disclosed in column 7, lines 4 to 15 of Baumgartner, the inner diameter of the friction ring 80 is slightly smaller than the outer diameter of the adjusting spindle 70, and engages the threads of the adjuster spindle 70 to create a frictional torque on the adjusting spindle 70. This prevents rotation of the adjusting spindle 70 when stressed by shaking. As the friction ring 80 engages a threaded portion of the spindle 70, rotating of the adjusting spindle 70 is reduced. If the friction ring 80 was employed on an unthreaded portion as suggested by Angerfors, this benefit would be ruined as the effect of the friction ring 80 against the adjusting spindle 70 would be reduced. Engagement of the friction ring 80 with the threaded adjustment spindle 70 prevents rotation of the spindle 70. It is basic patent law that a proper suggestion to combine cannot ruin goals or features of the base reference. There is no proper suggestion to combine the references, and Applicant's claims are not obvious.

Additionally, if Baumgartner included an unthreaded portion as suggested by Angerfors, the adjusting spindle 70 would have less threads. As the brake pads wear, the tappet assemblies are adjusted to compensate for wear. To ensure that the friction ring 80 remains on an unthreaded portion of the adjusting spindle 70 as the brake pads are worn, a considerable length of threads must be removed from the adjusting spindle 70. If an unthreaded portion was added to Baumgartner, the adjustment feature would be ruined. Applicant's claims are not obvious.

B. The rejection of Claims 20, 21, 27 and 28 under 35 U.S.C. 103(a) is improper.

The rejection of Claims 20, 21, 27 and 28 is separately contested from the rejection of Claims 19 et al. Claims 20, 21, 27 and 28 require that the outer surface of the support element provides a smooth scaling surface which is engaged by a lip portion of a further seal. As shown in Figure 1B of Baumgartner, nothing engages the outer surface of the angular part 81, which the Examiner is calling the support element. Neither of the references disclose or suggest a seal engaging an outer part of a support element as required by Applicant's claims, and Claims 20, 21, 27 and 28 are not obvious. Therefore, a rejection based on obviousness is improper for Claims 20, 21, 27 and 28.

C. The rejection of Claims 22 and 29 under 35 U.S.C. 103(a) is improper.

The rejection of Claims 22 and 29 is separately contested from the rejection of Claims 19 et al. Claims 22 and 29 require that the support element is carried externally by the sleeve. In Baumgartner, as shown in Figure 1B, the angular part 81 is not carried externally by the transverse member 7, but rather is carried externally of the friction ring 80. Angerfors also does not suggest any support element. As neither reference discloses or suggest a support element that is carried externally of a sleeve, claims 22 and 29 are further not obvious.

D. The rejection of Claims 23 and 30 under 35 U.S.C. 103(a) is improper.

The rejection of Claims 23 and 30 is separately contested from the rejection of Claims 19 et al. Claims 23 and 30 require that an annular base of the support element rests against an adjacent end of the sleeve. In Baumgartner, as shown in Figure 1B, the angular part 81 does it rest against an adjacent end of the transverse member 7, but rather is carried externally of the friction ring 80. Angerfors also does not suggest any support element. As neither reference discloses or suggests a support element that rests against an adjacent end of a sleeve, claims 23 and 30 are further not obvious in view of Baumgartner and Angerfors.

CLOSING

For the reasons set forth above, the rejection of all claims is improper and should be reversed. Appellant respectfully requests such an action.

Respectfully Submitted,

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Dated: September 30, 2002

CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being facsimile transmitted to the United States Patent and Trademark Office, TC3600, After Final, 703-872-9327.



Karin Butchko

CLAIM APPENDIX

19. A seal device for use in an adjustable tappet assembly for a disc brake for sealing between an internally threaded outer sleeve and an externally threaded internal shaft of the assembly, said device comprising a support element adapted to be carried by said sleeve, said support element carrying a seal for sealing between said sleeve and said shaft having a lip portion arranged to engage an unthreaded surface portion of said shaft in sealing relationship for providing sealing during axial movement of said shaft relative to said sleeve.

20. The seal device as recited in claim 19 wherein an outer surface of the support element serves, in use, to provide a smooth sealing surface for engagement by a lip portion of a further seal carried by an adjacent structure.

21. The seal device as recited in claim 20 wherein said support element is in the form of a cap having a generally annular skirt adapted to fit, in use, over an end portion of said sleeve, said outer surface of said skirt serving for engagement by said further seal.

22. The seal device as recited in claim 19 wherein said support element is carried externally by said sleeve.

23. The seal device as recited in claim 19 wherein an annular base of said support element rests, in use, against said adjacent end of said sleeve with a portion of said shaft extending through said base.

24. The seal device as recited in claim 23 wherein said annular base houses an annular rim of said seal for sealing between said sleeve and said shaft.

25. The seal device as recited in claim 23 wherein said lip portion of said seal for sealing between said sleeve and said shaft extends axially away from said base and said sleeve.

26. An adjustable tappet assembly for a disc brake comprising an internally threaded outer sleeve, an externally threaded internal shaft, and a seal device, said seal device having a support element carried by said sleeve, said support element carrying a seal for sealing between said sleeve and said shaft having a lip portion arranged to engage an unthreaded surface portion of said shaft in sealing relationship for providing sealing during axial movement of said shaft relative to said sleeve.

27. The assembly as recited in claim 26 wherein an outer surface of said support element provides a smooth sealing surface engaged, in use, by a lip portion of a further seal carried by an adjacent structure.

28. The assembly as recited in claim 27 wherein said support element is in the form of a cap having a generally annular skirt fitted over an end portion of said sleeve, said outer surface of said skirt providing said sealing surface engaged by said further seal.

29. The assembly as recited in claim 26 wherein said support element is carried externally by said sleeve.

30. The assembly as recited in claim 26 wherein an annular base of said support element, rests, in use, against an adjacent end of said sleeve with a portion of said shaft extending through said base.

31. The assembly as recited in claim 30 wherein said annular base houses an annular rim of said seal for sealing between said sleeve and said shaft.

32. The assembly as recited in claim 30 wherein said lip portion of said seal for sealing between said sleeve and said shaft extends axially away from said base and said sleeve.

33. The assembly as recited in claim 26 wherein said assembly is incorporated into a disc brake.

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